

## IN THE CLAIMS

1. – 4. (Canceled).

5. (Currently Amended) A method for direct current (DC) feed control for a line card capable of being coupled to a subscriber line, comprising:

determining if the line card is operating in a current limit region of a direct current (DC) feed curve that includes the current limit region and at least one of an anti-saturation region and a resistance feed region, wherein the act of determining if the line card is operating in the current limit region comprises determining if a first value representative of DC current on the subscriber line is greater than a current limit value;

~~synthesizing a curve in the current limit region of the DC feed curve, wherein the synthesized curve is a linear curve with a negative slope;~~

determining a second value representative of a difference between the first value and the current limit value based on determining that the first value is greater than the current limit value;

determining a representative loop voltage based on a relation between the second value and the a synthesized curve, wherein the synthesized curve is in the current limit region of the DC feed curve, and wherein the synthesized curve is a linear curve with a negative slope, and wherein the relation comprises the representative loop voltage being equal to a predetermined voltage value added to a product of the slope of the synthesized curve and the second value; and

applying ~~[[the]]~~ a loop voltage to the subscriber line, wherein the loop voltage applied to the subscriber line is based on the representative loop voltage.

6. (Cancelled)

7. (Cancelled)

8. (Currently Amended) The method of claim 5, further including determining the loop voltage in at least one of [[an]] the anti-saturation region and [[a]] the resistance feed region in response to determining the line card is not operating in the current limit region.

9. (Currently Amended) A method for direct current (DC) feed control for a line card, comprising:

generating a current value proportional to a loop current flowing from a subscriber line;  
determining if the line card is operating in a current limit region of a direct current (DC) feed curve that includes the current limit region and at least one of an anti-saturation region and a resistance feed region in response to generating the current value, wherein the act of determining if the line card is operating in the current limit region comprises determining if a first value representative of DC current on the subscriber line is greater than a current limit value;

determining a second value representative of a difference between the first value and the current limit value based on determining that the first value is greater than the current limit value;

determining a representative loop voltage based on a relation between the second value and synthesizing a synthesized curve in the current limit region of the DC feed curve, wherein the curve is a linear curve with a negative slope, and wherein the relation comprises the representative loop voltage being equal to a predetermined voltage value added to a product of the slope of the synthesized curve and the second value; and

applying [[the]]a loop voltage to the subscriber line, wherein the loop voltage applied to the subscriber line is based on the representative loop voltage.

10. (Cancelled)

11. (Currently Amended) The method of claim 9, further including determining the loop voltage in at least one of [[an]] the anti-saturation region and [[a]] the resistance feed region in response to determining the line card is not operating in the current limit region.

12. (Currently Amended) An apparatus, comprising:  
a digital signal processor for:

determining if a line card is operating in a current limit region of a direct current (DC) feed curve that includes the current limit region and at least one of an anti-saturation region and a resistance feed region, wherein the act of determining if the line card is operating in the current limit region comprises determining if a first value representative of DC current on the subscriber line is greater than a current limit value; and

determining a second value representative of a difference between the first value and the current limit value based on determining that the first value is greater than the current limit value;

determining a representative loop voltage based on a relation between the second value and a synthesized curve in the current limit region of the DC feed curve, wherein the curve is a linear curve with a negative slope, and wherein the relation comprises the representative loop voltage being equal to a predetermined voltage value added to a product of the slope of the synthesized curve and the second value; and

a circuitry for applying [[the]]a loop voltage to a subscriber line, wherein the loop voltage applied to the subscriber line is based on the representative loop voltage.

13. (Cancelled)

14. (Currently Amended) The apparatus of claim ~~[[13]]~~12, wherein the synthesized curve is based on an anti-saturation region and the current limit region of the DC feed curve.

15. (Currently Amended) The apparatus of claim ~~[[13]]~~12, wherein the digital signal processor is further for determining the loop voltage in at least one of ~~[[an]]~~ the anti-saturation region and ~~[[a]]~~ the resistance feed region in response to determining the line card is not operating in the current limit region.

16. - 19. (Cancelled).

20. (Currently Amended) A line card, comprising:  
a digital signal processor for:

determining if a line card is operating in a current limit region of a direct current (DC) feed curve that includes the current limit region and at least one of an anti-saturation region and a resistance feed region, wherein the act of determining if the line card is operating in the current limit region comprises determining if a first value representative of DC current on the subscriber line is greater than a current limit value; [[and]]

determining a second value representative of a difference between the first value and the current limit value based on determining that the first value is greater than the current limit value;

determining a representative loop voltage based on a relation between the second value and a synthesized curve in the current limit region of the DC feed curve, wherein the curve is a linear curve with a negative slope, and wherein the relation comprises the representative loop voltage being equal to a predetermined voltage value added to a product of the slope of the synthesized curve and the second value; and

a subscriber line interface circuit for applying [[the]]a loop voltage to the subscriber line, wherein the loop voltage applied to the subscriber line is based on the representative loop voltage.

21. (Currently Amended) The line card of claim 20, wherein the digital signal processor is further for determining the loop voltage in at least one of [[an]] the anti-saturation region and [[a]] the resistance feed region in response to determining the line card is not operating in the current limit region.

22. (Original) The line card of claim 20, wherein the subscriber line interface circuit is a voltage-feed subscriber line interface circuit.

23. (Currently Amended) An apparatus, comprising:

means for determining if a line card adapted to be coupled to a subscriber line is operating in a current limit region of a direct current (DC) feed curve that includes the current limit region and at least one of an anti-saturation region and a resistance feed region, wherein the act of determining if the line card is operating in the current limit region comprises determining if a first value representative of DC current on the subscriber line is greater than a current limit value;

means for determining if the line card is operating in a current limit region of a direct current (DC) feed curve in response to generating a current value;

means for determining a second value representative of a difference between the first value and the current limit value based on determining that the first value is greater than the current limit value;

means for determining a representative loop voltage based on a relation between the second value and synthesizing a synthesized curve in the current limit region, wherein the curve is a linear curve with a negative slope, and wherein the relation comprises the representative loop voltage being equal to a predetermined voltage value added to a product of the slope of the synthesized curve and the second value; and

means for applying ~~[[the]]~~ a loop voltage to the subscriber line, wherein the loop voltage applied to the subscriber line is based on the representative loop voltage.

24. – 25 (Cancelled).

26. (Previously Presented) The method of claim 5, further comprising:

receiving, using a first path, a signal and determining a cancellation current proportional to a current flowing from the subscriber line; and

adjusting, using a second path, a DC level control based on the determined cancellation current, wherein adjusting a DC level control comprises providing a voltage to the subscriber line based on the cancellation current.

27. (Currently Amended) The method of claim 26, wherein the first path comprises an integrator for integrating the ~~signal~~ second value representative of a difference between the first

value and the current limit value based on determining that the first value is greater than the current limit value.

28. (Previously Presented) The apparatus of claim 12, further comprising:  
a first path for receiving a signal and determining a cancellation current proportional to a current flowing from the subscriber line; and  
a second path for adjusting a DC level control based on the determined cancellation current, wherein adjusting the DC level control comprises providing a voltage to the subscriber line based on the cancellation current.

29. (Previously Presented) The apparatus of claim 28, wherein the first path comprises an integrator for integrating the ~~signal~~second value representative of a difference between the first value and the current limit value based on determining that the first value is greater than the current limit value.

30. (Cancelled)

31. (New) The method of claim 5, wherein the predetermined voltage value represents a voltage value at which the current limit region begins.